Supplementary materials

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Survey questions

Demographics

1. How old are you? _____ years old
2. What is your gender?
    a. Male
    b. Female
    c. Non-binary
    d. Prefer not to say
3. What is your nationality? _____
4. What is your highest level of education attained?
    a. No formal education
    b. Primary school certificate
    c. Secondary school certificate
    d. Diploma
    e. Degree
5. What is your marital status?
    a. Never married
    b. Married and/or living with a partner
    c. Separated
    d. Divorced
    e. Widowed
6. What is your occupation?
    a. Employed (please specify): _____
    b. Unemployed
    c. Student
    d. Retiree
    e. Homemaker
7. Which of these best describes the main area where you live?
    a. Urban
    b. Peri-urban
    c. Rural
    d. Slums/Informal settlers families
8. Do you have access to a mobile phone?
    a. No
    b. Yes, it is a feature phone
    c. Yes, it is a smartphone
9. Do you have access to internet connection?
    a. No
    b. Yes

Awareness

10. Have you heard of the term 'citizen science' before this survey?
    a. No
    b. Yes, please give example(s): _____
11. Can you name 3 words/phrases that come to mind when you hear the term 'citizen science'? _____ _____ _____
12. Have you heard of communities/people joining and contributing to science/research projects where they can help to design the project, collect, or analyze data?
    a. No
    b. Yes, please give example(s): _____

[SHOW CITIZEN SCIENCE ANIMATION VIDEO or INFOGRAPHIC]

13. Have you ever participated in the following activities related to the topic of pandemic/outbreak? **Please tick all that apply.**
    a. Filled up surveys or participated in interviews/discussions
    b. Helped in the design of a research project
    c. Involved in the rollout of a research project

   d. Make decisions together with researchers while planning for a research project (such as purpose, type of activities, analysis of findings)
   e. Lead/co-lead a community-based research project
   f. Co-create new interventions/policies based on findings from a research project
   g. Others (please specify): _____
   h. None of the above
14. Do you know of any citizen science activities related to managing pandemics/outbreaks (e.g. COVID-19) in your country?
   a. No
   b. Yes, please give example(s): _____
15. Do you know how you can join and contribute to citizen science projects in your country?
   a. No [skip to Qn17]
   b. Yes
16. Through what channels do you obtain information about citizen science projects? **Please tick all that apply.**
   a. Traditional media (newspaper, television, radio)
   b. Social media
   c. Websites
   d. Science/research organizations
   e. Community-based organizations
   f. Government initiatives
   g. Word of mouth (friends, family)
   h. Others (please specify): _____

Relatability

17. I am interested in science or health-related topics

o----------o----------o----------o----------o----------o
Strongly disagree Disagree Undecided Agree Strongly agree

18. I am interested to participate in citizen science activities

o----------o----------o----------o----------o----------o
Strongly disagree Disagree Undecided Agree Strongly agree

19. I can understand what citizen science means and how it relates to me

o----------o----------o----------o----------o----------o
Strongly disagree Disagree Undecided Agree Strongly agree

20. It is important/useful to involve the public in research/science activities

o----------o----------o----------o----------o----------o
Strongly disagree Disagree Undecided Agree Strongly agree

21. Have you ever thought of participating in pandemic/outbreak-related citizen science activities?
   a. No
   b. Yes
22. If given the chance, what topics will you be interested to participate in for a citizen science project? **Please tick all that apply.** [all answers except option A, skip to Qn24]
   a. Managing pandemic/outbreak (e.g. COVID-19 preparedness and response)
   b. Environmental issues/pollution
   c. Nature and wildlife
   d. Health and well-being
   e. Digital technologies
   f. Social and cultural issues
   g. Others (please specify): _____
   h. I am not interested in citizen science
23. What activities will you be interested to participate in for pandemic/outbreak-related citizen science projects? **Please tick all that apply.**
   a. Help to identify different data sources or gather community/local data to respond better to pandemics/outbreaks
   b. Provide information to help researchers develop or improve predictive models to better predict, prepare, and respond to pandemics/outbreaks

c. Co-design communication strategies for the local community so that pandemic/outbreak-related information is understandable and actionable by the public
d. Understand human behaviour and practices when responding to pandemics/outbreaks and its associated measures/interventions
e. Sitting at the same table as other stakeholders such as researchers and policymakers to discuss and make decisions on pandemic/outbreak-related matters
f. Others (please specify): _____

Acceptability (determinants)
For the following 6 questions, you will be asked to select factors in different categories which will influence your decision to participate in pandemic/outbreak-related citizen science activities. After which, you will be asked to rank these 6 different categories of factors.

24. Which of the following **outcome/benefit expectation factors** will influence your decision to participate in pandemic/outbreak-related citizen science activities? **Please choose all that apply.**
    a. The value/importance of my participation in influencing real-world outcomes
    b. Able to learn new knowledge/skills
    c. Monetary incentives
    d. Urgency/seriousness of the problem to be addressed by the citizen science project (e.g. impact of pandemic/outbreak on my life)
    e. An understanding of how the citizens science project will help me and my community
25. Among the factors you have chosen, please choose the factor most important to you: _____
26. Which of the following **cultural factors** will influence your decision to participate in pandemic/outbreak-related citizen science activities? **Please choose all that apply.**
    a. The language used is easy for me to understand
    b. Religious/spiritual belief
    c. Family upbringing
    d. Origin/Immigration status/Acculturation
27. Among the factors you have chosen, please choose the factor most important to you: _____
28. Which of the following **social factors** will influence your decision to participate in pandemic/outbreak-related citizen science activities? **Please choose all that apply.**
    a. Being part of a community/social network
    b. My friends/family are also participating
    c. It is popular/trendy
    d. My loved ones are supportive
    e. Stigma faced if I participate
    f. Having a well-known/celebrity spokesperson promoting the activities
29. Among the factors you have chosen, please choose the factor most important to you: _____
30. Which of the following **attitude/emotional factors** will influence your decision to participate in pandemic/outbreak-related citizen science activities? **Please choose all that apply.**
    a. Feeling empowered/in control to resolve an issue that is important to me
    b. I enjoy the activities
    c. It gives me a sense of achievement
    d. My interest level in the topic/activities
31. Among the factors you have chosen, please choose the factor most important to you: _____
32. Which of the following **project-specific details** will influence your decision to participate in pandemic/outbreak-related citizen science activities? **Please choose all that apply.**
    a. Who is the organizer
    b. Having a clear understanding of what tasks are expected of me
    c. Able to relate to the purpose of the citizen science project
    d. Transparency on how the data will be handled
    e. Privacy and confidentiality measures that are in place
    f. Ease of finding information about the project/widespread awareness campaigns/advertisements
    g. Amount of control I have over the project (active vs passive role)
33. Among the factors you have chosen, please choose the factor most important to you: _____
34. Which of the following **practical considerations** will influence your decision to participate in pandemic/outbreak-related citizen science activities? **Please choose all that apply.**
    a. Time commitment (hours per week)
    b. Commitment period (long-term or short-term)
    c. Competing priorities/stage of life I am in

   d. Knowledge/skills needed to carry out the activities
   e. Cost of participation
   f. Convenience/location
   g. Medium of access (e.g. in-person, online, text message, call)
   h. The level of risks/danger involved
35. Among the factors you have chosen, please choose the factor most important to you: _____
36. Based on the above examples, rank the following categories of factors from the **most important (1) to least important (6)** when deciding whether to participate in pandemic/outbreak-related citizen science activities.
   a. Outcome/benefit expectation factors
   b. Cultural factors
   c. Social factors
   d. Attitude/emotional factors
   e. Project-specific details
   f. Practical considerations
37. Are there other factors that have not been mentioned that will discourage you from participating in citizen science activities?
   a. No
   b. Yes (please specify): _____
38. Do you know of anyone (e.g. friends, family, colleagues) who participates/has participated in pandemic/outbreak-related citizen science activities?
   a. No
   b. Yes
39. If given the chance to participate in pandemic/outbreak-related citizen science activities, do you expect to gain/learn anything out of your participation?
   a. No [skip to Qn41]
   b. Yes
40. What do you hope to gain/learn? **Please tick all that apply.**
   a. Basic understanding of science/research
   b. Skills needed to carry out science/research activities
   c. Use of digital technologies
   d. Collective problem solving skills
   e. Critical thinking skills
   f. Forming a community/network of like minded people
   g. Others (please specify): _____

Feasibility

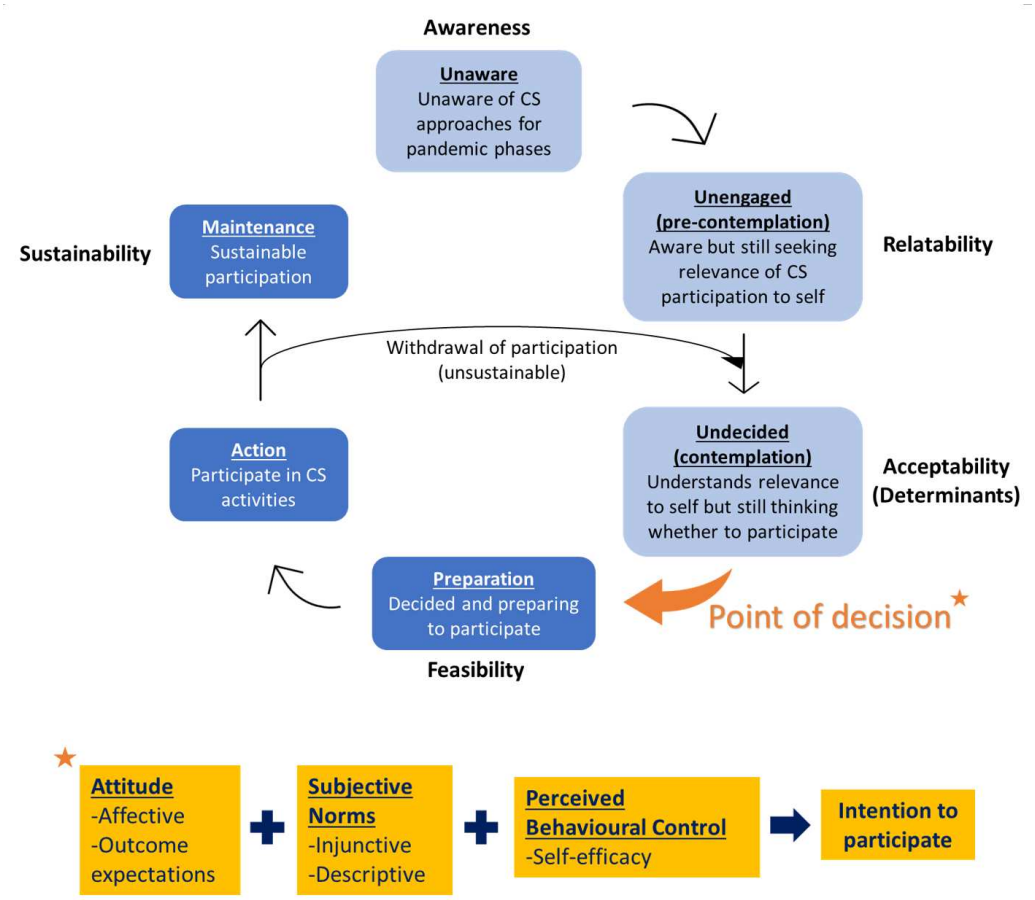
41. Do you think participation in pandemic/outbreak-related citizen science activities will require specific knowledge or skill set?
   a. No
   b. Yes
42. Do you think you have the skills to participate in pandemic/outbreak-related citizen science activities?
   a. No, and I am not confident that I can learn
   b. No, but I am interested to learn
   c. Somewhat, but will need more training
   d. Yes, I am confident I have the skills
43. What do you think are the 3 most important attributes/characteristics that a person must have to participate in pandemic/outbreak-related citizen science activities? **Please tick your top 3.**
   a. Communication
   b. Confidence in self
   c. Curiosity
   d. Outgoing/love to share
   e. Open to new ideas
   f. Others (please specify): _____
44. Assuming that you have access to a mobile phone and stable internet connection, will you be interested to participate in citizen science activities through digital platforms instead of traditional paper form or in-person interactions?
   a. No
   b. Yes

45. Do you think you have the skills/confidence needed to participate in digital citizen science activities, which involves the use of digital technologies such as mobile phones?
    a. No, and I am not confident that I can learn
    b. No, but I am interested to learn
    c. Somewhat, but will need more training
    d. Yes, I am confident that I have the skills

Sustainability

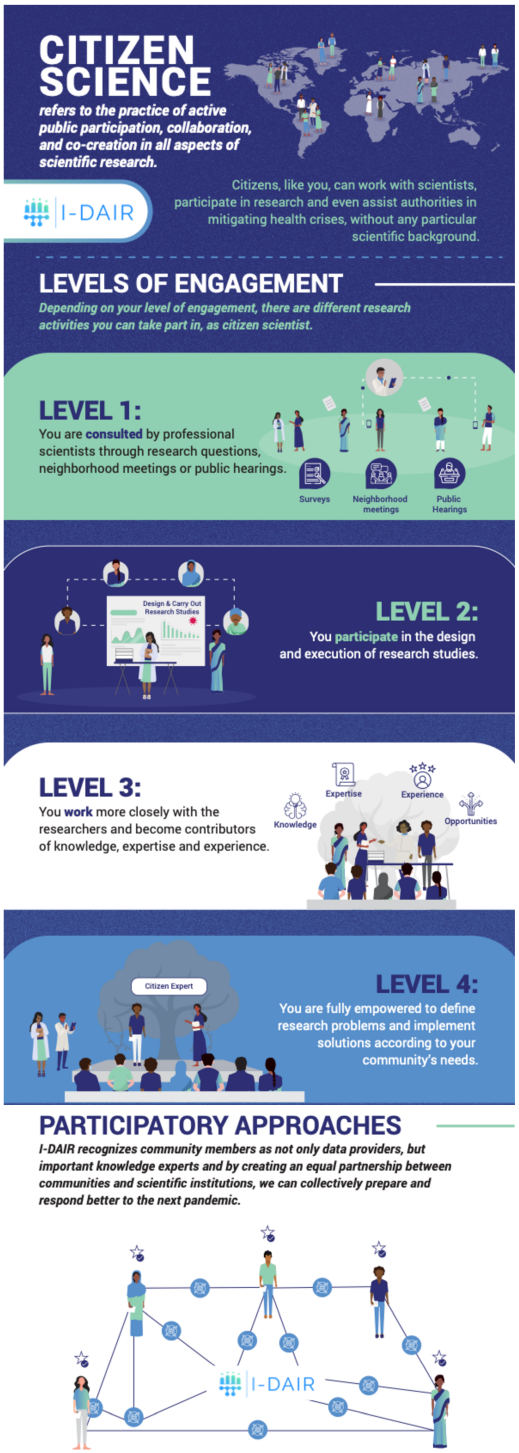
46. What do you hope to achieve in the long-term through your participation in pandemic/outbreak-related citizen science activities? **Please tick all that apply.**
    a. Understand how science works
    b. Collective goal setting and problem solving in the community
    c. Being informed of the latest findings/knowledge
    d. Empowered to make decisions with policymakers
    e. Having my voice heard
    f. Prevent the next pandemic/outbreak
    g. Others (please specify): _____
47. What factors will encourage you to continue participation in the long run? **Please tick all that apply.**
    a. Helping relationships/bonding from the social networks formed
    b. Able to see the impact of my contribution
    c. Regular follow up/communication with the researchers or policymakers
    d. Others (please specify): _____

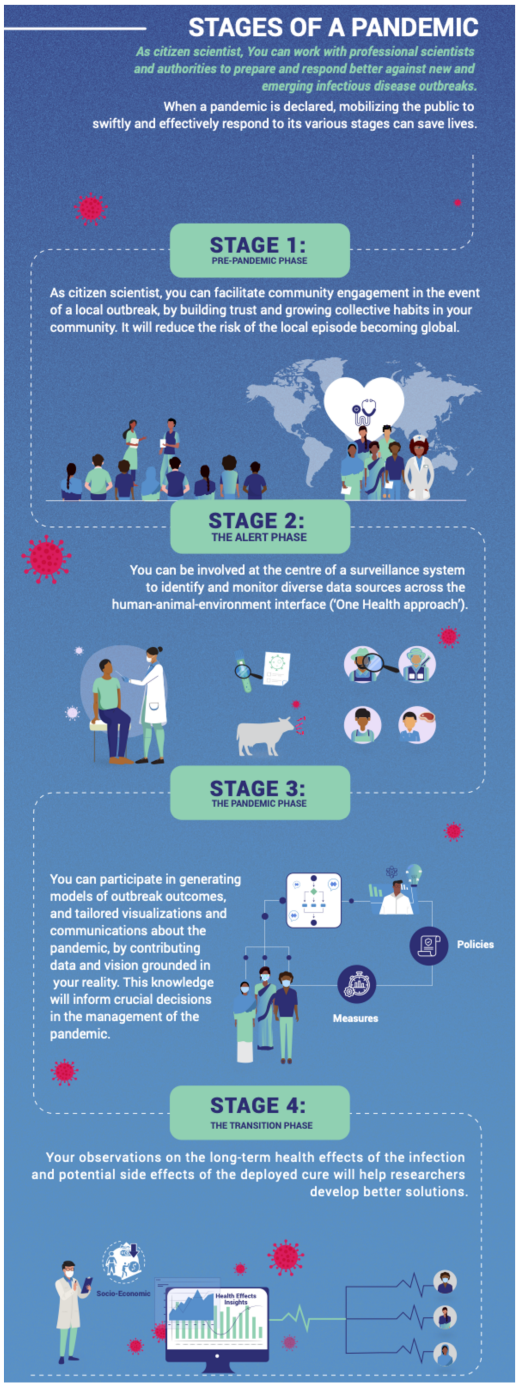
Precaution adoption process model and the theory of planned behavior



Citizen science infographics and video

(A) Infographics





(B) Video link: https://www.i-dair.org/pandemic-preparedness-and-response

Focus group discussion guide

1. Let us start the discussion by first talking about the concept of citizen science. From the survey, we found that you relate these words to the term citizen science. [*print out word cloud of CS phrases and show to participants*] Can you explain how you relate to these words and why you think they describe citizen science?
    a. Imagine that now you have to explain citizen science to a fellow friend/peer, what would you say in your own words and how would you do it? [probe for slogan, medium to use]
2. In the survey, we also explored some of the citizen science activities related to managing pandemics in *your country [replace with country name]*. Some examples mentioned included [*insert activities based on survey findings*]. For these activities, can you share more about how you have been involved, elaborating on your role and the processes and tasks involved? [*for those who have not been involved, facilitator could ask them to imagine how they would like to be involved and what is the ideal state*]
    a. What did you like about the experience?
    b. What did you not like about the experience? How can it be improved?
    c. Are there other activities which you can think of that have not been mentioned? Please elaborate.
3. According to the survey, most people agreed that it is important/useful to involve the community in science/research activities for managing pandemics/outbreaks.
    a. What role(s) do you think citizens/the public should play?
    b. What advantages can you think of when involving the community in science/research activities for managing pandemics/outbreaks?
    c. What disadvantages can you think of when involving the community in science/research activities for managing pandemics/outbreaks?
4. What are the top 3 reasons that will motivate you to participate in pandemic/outbreak-related citizen science activities?
    a. **Why** these reasons?
5. What are the top 3 reasons that will discourage/stop you from participating in pandemic/outbreak-related citizen science activities? [*possible probes: work/study pressure, family pressure, health issues, communication*]
    a. **Why** these reasons?
6. Of the following categories of reasons that will determine your participation in pandemic/outbreak-related citizen science activities [*print out the table of categories and show to participants*], please rank them according to which you think is the most important reason to the least important reason. Please explain **why**.
7. One of the main objectives of citizen science is to hear the voices of the community and allow community members, researchers, and policymakers to define problems together and work on solutions together. What do you think of such an approach?
    a. In terms of having your voices heard, how do you envision this being done? [*probe for the entire process from defining problem to co-designing the solution*]
        i. What will be your main wishes and concerns?
    b. Are there any other concerns when interacting with researchers and policymakers?
8. According to the survey, most people will be interested to participate in citizen science activities through digital platforms instead of traditional paper form or in-person interactions. Please tell us more about **why** this is so.
    a. What are some of the advantages of each method of engagement?
    b. What are some of the disadvantages of each method of engagement?
9. What types of pandemic/outbreak-related citizen science activities do you think can be done digitally/online?
10. According to the survey, most people expect to gain/learn something out of their participation in citizen science activities. Can you help us understand what do you hope to gain/learn?
    a. **Why** is this important to you?
11. Do you think participating in citizen science activities is sustainable in the long run? Please **explain**.
    a. If no, what will encourage you to continue your participation in such activities and why so?
    b. If yes, why so?
12. What resources do you think are needed for you to participate in pandemic/outbreak-related citizen science activities in the long run?

Distribution of variables across the stages of readiness

Country	Variable	Levels	N (%)	Unaware n (%)	Aware but unengaged n (%)	Aware, engaged, but undecided n (%)	Aware, engaged, decided, but yet to take action n (%)	Aware, engaged, decided, took action n (%)
Bangladesh	Gender	Male	155 (55·4)	145 (93·5)	0	1 (0·6)	4 (2·6)	5 (3·2)
		Female	125 (44·6)	117 (93·6)	0	3 (2·4)	2 (1·6)	3 (2·4)
	Education	No formal education	29 (10·4)	29 (100·0)	0	0	0	0
		Primary school	57 (20·4)	57 (100·0)	0	0	0	0
		Secondary school	65 (23·2)	63 (96·9)	0	0	1 (1·5)	1 (1·5)
		Diploma	33 (11·8)	30 (90·9)	0	2 (6·1)	1 (3·0)	0
		Degree	96 (34·3)	83 (86·5)	0	2 (2·1)	4 (4·2)	7 (7·3)
	Marital status	Never married	63 (22·5)	60 (95·2)	0	1 (1·6)	2 (3·2)	0
		Married and/or living with partner	213 (76·1)	198 (93·0)	0	3 (1·4)	4 (1·9)	8 (3·8)
		Separated/Divorced/Widowed	4 (1·4)	4 (100·0)	0	0	0	0
	Occupation	Unemployed	18 (6·4)	18 (100·0)	0	0	0	0
		Employed	164 (58·6)	148 (90·2)	0	3 (1·8)	5 (3·0)	8 (4·9)
		Student	36 (12·9)	34 (94·4)	0	1 (2·8)	1 (2·8)	0
		Retiree	1 (0·4)	1 (100·0)	0	0	0	0
		Homemaker	61 (21·8)	61 (100·0)	0	0	0	0
	Living area	Urban	46 (16·4)	42 (91·3)	0	3 (6·5)	1 (2·2)	0
		Peri-urban	30 (10·7)	28 (93·3)	0	0	1 (3·3)	1 (3·3)
		Rural	204 (72·9)	192 (94·1)	0	1 (0·5)	4 (2·0)	7 (3·4)
	Mobile phone access	No	8 (2·9)	8 (100·0)	0	0	0	0
		Yes, feature phone	97 (34·6)	93 (95·9)	0	1 (1·0)	1 (1·0)	2 (2·1)
		Yes, smartphone	175 (62·5)	161 (92·0)	0	3 (1·7)	5 (2·9)	6 (3·4)
	Internet access	No	102 (36·4)	98 (96·1)	0	1 (1·0)	1 (1·0)	2 (2·0)
		Yes	178 (63·6)	164 (92·1)	0	3 (1·7)	5 (2·8)	6 (3·4)
India	Gender	Male	140 (50·0)	43 (30·7)	41 (29·3)	38 (27·1)	5 (3·6)	13 (9·3)
		Female	140 (50·0)	36 (25·7)	51 (36·4)	25 (17·9)	11 (7·9)	17 (12·1)
	Education	No formal education	18 (6·4)	12 (66·7)	6 (33·3)	0	0	0
		Primary school	54 (19·3)	18 (33·3)	31 (57·4)	5 (9·3)	0	0
		Secondary school	126 (45·0)	34 (27·0)	42 (33·3)	31 (24·6)	10 (7·9)	9 (7·1)
		Diploma	24 (8·6)	5 (20·8)	7 (29·2)	7 (29·2)	0	5 (20·8)
		Degree	58 (20·7)	10 (17·2)	6 (10·3)	20 (34·5)	6 (10·3)	16 (27·6)
	Marital status	Never married	92 (32·9)	15 (16·3)	28 (30·4)	31 (33·7)	12 (13·0)	6 (6·5)
		Married and/or living with partner	176 (62·9)	59 (33·5)	58 (33·0)	32 (18·2)	4 (2·3)	23 (13·1)
		Separated/Divorced/Widowed	12 (4·3)	5 (41·7)	6 (50·0)	0	0	1 (8·3)
	Occupation	Unemployed	13 (4·6)	2 (15·4)	7 (53·8)	2 (15·4)	0	2 (15·4)
		Employed	136 (48·6)	42 (30·9)	34 (25·0)	31 (22·8)	3 (2·2)	26 (19·1)
		Student	60 (21·4)	5 (8·3)	20 (33·3)	24 (40·0)	11 (18·3)	0
		Retiree	16 (5·7)	6 (37·5)	6 (37·5)	2 (12·5)	0	2 (12·5)
		Homemaker	55 (19·6)	24 (43·6)	25 (45·5)	4 (7·3)	2 (3·6)	0
	Living area	Urban	4 (1·4)	2 (50·0)	0	0	0	2 (50·0)
		Peri-urban	1 (0·4)	1 (100·0)	0	0	0	0
		Rural	269 (96·1)	70 (26·0)	92 (34·2)	63 (23·4)	16 (5·9)	28 (10·4)
		Slums/Informal settler families	6 (2·1)	6 (100·0)	0	0	0	0
	Mobile phone access	No	37 (13·2)	19 (51·4)	17 (45·9)	0	0	1 (2·7)
		Yes, feature phone	65 (23·2)	24 (36·9)	30 (46·2)	7 (10·8)	1 (1·5)	3 (4·6)
		Yes, smartphone	178 (63·6)	36 (20·2)	45 (25·3)	56 (31·5)	15 (8·4)	26 (14·6)
	Internet access	No	99 (35·4)	43 (43·4)	45 (45·5)	6 (6·1)	1 (1·0)	4 (4·0)
		Yes	181 (64·6)	36 (19·9)	47 (26·0)	57 (31·5)	15 (8·3)	26 (14·4)
Indonesia	Gender	Male	172 (46·7)	121 (70·3)	6 (3·5)	18 (10·5)	2 (1·2)	25 (14·5)
		Female	196 (53·3)	149 (76·0)	5 (2·6)	7 (3·6)	3 (1·5)	32 (16·3)
	Education	No formal education	2 (0·5)	2 (100·0)	0	0	0	0
		Primary school	23 (6·2)	21 (91·3)	0	2 (8·7)	0	0
		Secondary school	177 (48·1)	138 (78·0)	6 (3·4)	13 (7·3)	2 (1·1)	18 (10·2)
		Diploma	38 (10·3)	25 (65·8)	2 (5·3)	3 (7·9)	1 (2·6)	7 (18·4)
		Degree	128 (34·8)	84 (65·6)	3 (2·3)	7 (5·5)	2 (1·6)	32 (25·0)
	Marital status	Never married	210 (57·1)	159 (75·7)	7 (3·3)	12 (5·7)	5 (2·4)	27 (12·9)
		Married and/or living with partner	129 (35·1)	85 (65·9)	4 (3·1)	11 (8·5)	0	29 (22·5)
		Separated/Divorced/Widowed	29 (7·9)	26 (89·7)	0	2 (6·9)	0	1 (3·4)
	Occupation	Unemployed	54 (14·7)	46 (85·2)	4 (7·4)	2 (3·7)	0	2 (3·7)
		Employed	192 (52·2)	125 (65·1)	4 (2·1)	17 (8·9)	3 (1·6)	43 (22·4)
		Student	94 (25·5)	74 (78·7)	3 (3·2)	4 (4·3)	2 (2·1)	11 (11·7)
		Retiree	4 (1·1)	4 (100·0)	0	0	0	0
		Homemaker	24 (6·5)	21 (87·5)	0	2 (8·3)	0	1 (4·2)
	Living area	Urban	188 (51·1)	139 (73·9)	2 (1·1)	8 (4·3)	2 (1·1)	37 (19·7)
		Peri-urban	38 (10·3)	34 (89·5)	2 (5·3)	1 (2·6)	0	1 (2·6)
		Rural	125 (34·0)	85 (68·0)	7 (5·6)	16 (12·8)	2 (1·6)	15 (12·0)
		Slums/Informal settler families	17 (4·6)	12 (70·6)	0	0	1 (5·9)	4 (23·5)
	Mobile phone access	No	17 (4·6)	16 (94·1)	0	0	0	1 (5·9)
		Yes, feature phone	34 (9·2)	31 (91·2)	1 (2·9)	1 (2·9)	1 (2·9)	0
		Yes, smartphone	317 (86·1)	223 (70·3)	10 (3·2)	24 (7·6)	4 (1·3)	56 (17·7)

	Internet access	No	31 (8·4)	31 (100·0)	0	0	0	0
		Yes	337 (91·6)	239 (70·9)	11 (3·3)	25 (7·4)	5 (1·5)	57 (16·9)
Nepal	Gender	Male	161 (57·5)	39 (24·2)	9 (5·6)	24 (14·9)	30 (18·6)	59 (36·6)
		Female	119 (42·5)	31 (26·1)	8 (6·7)	25 (21·0)	24 (20·2)	31 (26·1)
	Education	No formal education	19 (6·8)	7 (36·8)	4 (21·1)	7 (36·8)	0	1 (5·3)
		Primary school	34 (12·1)	14 (41·2)	5 (14·7)	8 (23·5)	3 (8·8)	4 (11·8)
		Secondary school	101 (36·1)	31 (30·7)	5 (5·0)	19 (18·8)	22 (21·8)	24 (23·8)
		Diploma	69 (24·6)	7 (10·1)	2 (2·9)	8 (11·6)	18 (26·1)	34 (49·3)
		Degree	57 (20·4)	11 (19·3)	1 (1·8)	7 (12·3)	11 (19·3)	27 (47·4)
	Marital status	Never married	99 (35·4)	19 (19·2)	2 (2·0)	14 (14·1)	31 (31·3)	33 (33·3)
		Married and/or living with partner	166 (59·3)	50 (30·1)	12 (7·2)	32 (19·3)	23 (13·9)	49 (29·5)
		Separated/Divorced/Widowed	15 (5·4)	1 (6·7)	3 (20·0)	3 (20·0)	0	8 (53·3)
	Occupation	Unemployed	15 (5·4)	9 (60·0)	2 (13·3)	2 (13·3)	1 (6·7)	1 (6·7)
		Employed	152 (54·3)	28 (18·4)	5 (3·3)	23 (15·1)	29 (19·1)	67 (44·1)
		Student	64 (22·9)	12 (18·8)	3 (4·7)	12 (18·8)	20 (31·2)	17 (26·6)
		Retiree	21 (7·5)	10 (47·6)	2 (9·5)	2 (9·5)	2 (9·5)	5 (23·8)
		Homemaker	28 (10·0)	11 (39·3)	5 (17·9)	10 (35·7)	2 (7·1)	0
	Living area	Urban	213 (76·1)	50 (23·5)	10 (4·7)	35 (16·4)	43 (20·2)	75 (35·2)
		Peri-urban	48 (17·1)	11 (22·9)	6 (12·5)	10 (20·8)	11 (22·9)	10 (20·8)
		Rural	19 (6·8)	9 (47·4)	1 (5·3)	4 (21·1)	0	5 (26·3)
	Mobile phone access	No	8 (2·9)	1 (12·5)	5 (62·5)	2 (25·0)	0	0
		Yes, feature phone	4 (1·4)	2 (50·0)	0	1 (25·0)	0	1 (25·0)
		Yes, smartphone	268 (95·7)	67 (25·0)	12 (4·5)	46 (17·2)	54 (20·1)	89 (33·2)
	Internet access	No	12 (4·3)	3 (25·0)	5 (41·7)	3 (25·0)	0	1 (8·3)
		Yes	268 (95·7)	67 (25·0)	12 (4·5)	46 (17·2)	54 (20·1)	89 (33·2)
Philippines	Gender	Male	218 (47·5)	188 (86·2)	6 (2·8)	8 (3·7)	2 (0·9)	14 (6·4)
		Female	241 (52·5)	202 (83·8)	7 (2·9)	3 (1·2)	7 (2·9)	22 (9·1)
	Education	No formal education	19 (4·1)	17 (89·5)	2 (10·5)	0	0	0
		Primary school	44 (9·6)	39 (88·6)	2 (4·5)	1 (2·3)	0	2 (4·5)
		Secondary school	206 (44·9)	171 (83·0)	4 (1·9)	8 (3·9)	6 (2·9)	17 (8·3)
		Diploma	79 (17·2)	67 (84·8)	3 (3·8)	0	1 (1·3)	8 (10·1)
		Degree	111 (24·2)	96 (86·5)	2 (1·8)	2 (1·8)	2 (1·8)	9 (8·1)
	Marital status	Never married	283 (61·7)	243 (85·9)	8 (2·8)	9 (3·2)	3 (1·1)	20 (7·1)
		Married and/or living with partner	137 (29·8)	115 (83·9)	2 (1·5)	1 (0·7)	6 (4·4)	13 (9·5)
		Separated/Divorced/Widowed	39 (8·5)	32 (82·1)	3 (7·7)	1 (2·6)	0	3 (7·7)
	Occupation	Unemployed	90 (19·6)	79 (87·8)	6 (6·7)	0	1 (1·1)	4 (4·4)
		Employed	117 (25·5)	101 (86·3)	1 (0·9)	1 (0·9)	4 (3·4)	10 (8·5)
		Student	203 (44·2)	169 (83·3)	5 (2·5)	9 (4·4)	4 (2·0)	16 (7·9)
		Retiree	14 (3·1)	12 (85·7)	0	1 (7·1)	0	1 (7·1)
		Homemaker	35 (7·6)	29 (82·9)	1 (2·9)	0	0	5 (14·3)
	Living area	Urban	194 (42·3)	156 (80·4)	6 (3·1)	7 (3·6)	3 (1·5)	22 (11·3)
		Peri-urban	21 (4·6)	20 (95·2)	1 (4·8)	0	0	0
		Rural	229 (49·9)	202 (88·2)	5 (2·2)	4 (1·7)	4 (1·7)	14 (6·1)
		Slums/Informal settler families	15 (3·3)	12 (80·0)	1 (6·7)	0	2 (13·3)	0
	Mobile phone access	No	53 (11·5)	47 (88·7)	3 (5·7)	0	0	3 (5·7)
		Yes, feature phone	43 (9·4)	34 (79·1)	2 (4·7)	0	3 (7·0)	4 (9·3)
		Yes, smartphone	363 (79·1)	309 (85·1)	8 (2·2)	11 (3·0)	6 (1·7)	29 (8·0)
	Internet access	No	92 (20·0)	85 (92·4)	2 (2·2)	0	1 (1·1)	4 (4·3)
		Yes	367 (80·0)	305 (83·1)	11 (3·0)	11 (3·0)	8 (2·2)	32 (8·7)
Cameroon	Gender	Male	130 (45·0)	108 (83·1)	4 (3·1)	7 (5·4)	2 (1·5)	9 (6·9)
		Female	159 (55·0)	138 (86·8)	7 (4·4)	1 (0·6)	2 (1·3)	11 (6·9)
	Education	No formal education	24 (8·3)	24 (100·0)	0	0	0	0
		Primary school	61 (21·1)	59 (96·7)	0	1 (1·6)	1 (1·6)	0
		Secondary school	83 (28·7)	70 (84·3)	3 (3·6)	2 (2·4)	2 (2·4)	6 (7·2)
		Diploma	37 (12·8)	28 (75·7)	2 (5·4)	3 (8·1)	0	4 (10·8)
		Degree	84 (29·1)	65 (77·4)	6 (7·1)	2 (2·4)	1 (1·2)	10 (11·9)
	Marital status	Never married	156 (54·0)	131 (84·0)	6 (3·8)	3 (1·9)	2 (1·3)	14 (9·0)
		Married and/or living with partner	121 (41·9)	103 (85·1)	5 (4·1)	5 (4·1)	2 (1·7)	6 (5·0)
		Separated/Divorced/Widowed	12 (4·2)	12 (100·0)	0	0	0	0
	Occupation	Unemployed	49 (17·0)	41 (83·7)	2 (4·1)	1 (2·0)	0	5 (10·2)
		Employed	162 (56·1)	138 (85·2)	4 (2·5)	6 (3·7)	3 (1·9)	11 (6·8)
		Student	61 (21·1)	51 (83·6)	4 (6·6)	1 (1·6)	1 (1·6)	4 (6·6)
		Retiree	1 (0·3)	1 (100·0)	0	0	0	0
		Homemaker	16 (5·5)	15 (93·8)	1 (6·2)	0	0	0
	Living area	Urban	164 (56·7)	138 (84·1)	7 (4·3)	4 (2·4)	2 (1·2)	13 (7·9)
		Peri-urban	35 (12·1)	25 (71·4)	0	3 (8·6)	1 (2·9)	6 (17·1)
		Rural	69 (23·9)	62 (89·9)	4 (5·8)	1 (1·4)	1 (1·4)	1 (1·4)
		Slums/Informal settler families	21 (7·3)	21 (100·0)	0	0	0	0
	Mobile phone access	No	30 (10·4)	28 (93·3)	0	0	1 (3·3)	1 (3·3)
		Yes, feature phone	58 (20·1)	54 (93·1)	3 (5·2)	1 (1·7)	0	0
		Yes, smartphone	201 (69·6)	164 (81·6)	8 (4·0)	7 (3·5)	3 (1·5)	19 (9·5)
	Internet access	No	75 (26·0)	70 (93·3)	2 (2·7)	1 (1·3)	1 (1·3)	1 (1·3)
		Yes	214 (74·0)	176 (82·2)	9 (4·2)	7 (3·3)	3 (1·4)	19 (8·9)
Kenya	Gender	Male	66 (26·3)	46 (69·7)	0	5 (7·6)	1 (1·5)	14 (21·2)
		Female	185 (73·7)	124 (67·0)	6 (3·2)	9 (4·9)	3 (1·6)	43 (23·2)
	Education	No formal education	3 (1·2)	1 (33·3)	0	0	0	2 (66·7)
		Primary school	42 (16·7)	31 (73·8)	1 (2·4)	4 (9·5)	0	6 (14·3)

		Secondary school	103 (41·0)	65 (63·1)	2 (1·9)	5 (4·9)	1 (1·0)	30 (29·1)
		Diploma	70 (27·9)	52 (74·3)	3 (4·3)	5 (7·1)	2 (2·9)	8 (11·4)
		Degree	33 (13·1)	21 (63·6)	0	0	1 (3·0)	11 (33·3)
	Marital status	Never married	126 (50·2)	93 (73·8)	3 (2·4)	5 (4·0)	4 (3·2)	21 (16·7)
		Married and/or living with partner	85 (33·9)	54 (63·5)	1 (1·2)	7 (8·2)	0	23 (27·1)
		Separated/Divorced/Widowed	40 (15·9)	23 (57·5)	2 (5·0)	2 (5·0)	0	13 (32·5)
	Occupation	Unemployed	131 (52·2)	83 (63·4)	4 (3·1)	12 (9·2)	1 (0·8)	31 (23·7)
		Employed	27 (10·8)	18 (66·7)	0	2 (7·4)	0	7 (25·9)
		Student	77 (30·7)	60 (77·9)	2 (2·6)	0	3 (3·9)	12 (15·6)
		Retiree	2 (0·8)	1 (50·0)	0	0	0	1 (50·0)
		Homemaker	14 (5·6)	8 (57·1)	0	0	0	6 (42·9)
	Living area	Urban	68 (27·1)	51 (75·0)	0	4 (5·9)	3 (4·4)	10 (14·7)
		Peri-urban	26 (10·4)	16 (61·5)	2 (7·7)	1 (3·8)	0	7 (26·9)
		Rural	45 (17·9)	35 (77·8)	0	3 (6·7)	0	7 (15·6)
		Slums/Informal settler families	112 (44·6)	68 (60·7)	4 (3·6)	6 (5·4)	1 (0·9)	33 (29·5)
	Mobile phone access	No	22 (8·8)	17 (77·3)	0	2 (9·1)	0	3 (13·6)
		Yes, feature phone	45 (17·9)	29 (64·4)	2 (4·4)	2 (4·4)	0	12 (26·7)
		Yes, smartphone	184 (73·3)	124 (67·4)	4 (2·2)	10 (5·4)	4 (2·2)	42 (22·8)
	Internet access	No	75 (29·9)	52 (69·3)	1 (1·3)	4 (5·3)	0	18 (24·0)
		Yes	176 (70·1)	118 (67·0)	5 (2·8)	10 (5·7)	4 (2·3)	39 (22·2)
Uganda	Gender	Male	190 (48·1)	9 (4·7)	60 (31·6)	52 (27·4)	34 (17·9)	35 (18·4)
		Female	205 (51·9)	10 (4·9)	74 (36·1)	48 (23·4)	45 (22·0)	28 (13·7)
	Education	No formal education	58 (14·7)	6 (10·3)	33 (56·9)	16 (27·6)	2 (3·4)	1 (1·7)
		Primary school	150 (38·0)	2 (1·3)	50 (33·3)	44 (29·3)	29 (19·3)	25 (16·7)
		Secondary school	163 (41·3)	11 (6·7)	46 (28·2)	36 (22·1)	41 (25·2)	29 (17·8)
		Diploma	20 (5·1)	0	3 (15·0)	4 (20·0)	7 (35·0)	6 (30·0)
		Degree	4 (1·0)	0	2 (50·0)	0	0	2 (50·0)
	Marital status	Never married	96 (24·3)	8 (8·3)	31 (32·3)	24 (25·0)	20 (20·8)	13 (13·5)
		Married and/or living with partner	240 (60·8)	9 (3·8)	74 (30·8)	61 (25·4)	51 (21·2)	45 (18·8)
		Separated/Divorced/Widowed	59 (14·9)	2 (3·4)	29 (49·2)	15 (25·4)	8 (13·6)	5 (8·5)
	Occupation	Unemployed	101 (25·6)	7 (6·9)	17 (16·8)	36 (35·6)	22 (21·8)	19 (18·8)
		Employed	195 (49·4)	8 (4·1)	78 (40·0)	42 (21·5)	37 (19·0)	30 (15·4)
		Student	44 (11·1)	3 (6·8)	20 (45·5)	8 (18·2)	8 (18·2)	5 (11·4)
		Retiree	4 (1·0)	1 (25·0)	2 (50·0)	0	0	1 (25·0)
		Homemaker	51 (12·9)	0	17 (33·3)	14 (27·5)	12 (23·5)	8 (15·7)
	Living area	Urban	30 (7·6)	2 (6·7)	1 (3·3)	9 (30·0)	11 (36·7)	7 (23·3)
		Peri-urban	152 (38·5)	5 (3·3)	28 (18·4)	50 (32·9)	37 (24·3)	32 (21·1)
		Rural	211 (53·4)	12 (5·7)	104 (49·3)	41 (19·4)	31 (14·7)	23 (10·9)
		Slums/Informal settler families	2 (0·5)	0	1 (50·0)	0	0	1 (50·0)
	Mobile phone access	No	71 (18·0)	7 (9·9)	51 (71·8)	10 (14·1)	2 (2·8)	1 (1·4)
		Yes, feature phone	218 (55·2)	12 (5·5)	64 (29·4)	67 (30·7)	45 (20·6)	30 (13·8)
		Yes, smartphone	106 (26·8)	0	19 (17·9)	23 (21·7)	32 (30·2)	32 (30·2)
	Internet access	No	291 (73·7)	19 (6·5)	117 (40·2)	77 (26·5)	48 (16·5)	30 (10·3)
		Yes	104 (26·3)	0	17 (16·3)	23 (22·1)	31 (29·8)	33 (31·7)
Zimbabwe	Gender	Male	133 (45·5)	44 (33·1)	3 (2·3)	1 (0·8)	0	85 (63·9)
		Female	159 (54·5)	46 (28·9)	4 (2·5)	10 (6·3)	2 (1·3)	97 (61·0)
	Education	No formal education	1 (0·3)	1 (100·0)	0	0	0	0
		Primary school	11 (3·8)	1 (9·1)	1 (9·1)	0	0	9 (81·8)
		Secondary school	158 (54·1)	37 (23·4)	4 (2·5)	9 (5·7)	0	108 (68·4)
		Diploma	35 (12·0)	14 (40·0)	0	0	1 (2·9)	20 (57·1)
		Degree	87 (29·8)	37 (42·5)	2 (2·3)	2 (2·3)	1 (1·1)	45 (51·7)
	Marital status	Never married	96 (32·9)	38 (39·6)	3 (3·1)	4 (4·2)	1 (1·0)	50 (52·1)
		Married and/or living with partner	128 (43·8)	37 (28·9)	2 (1·6)	6 (4·7)	1 (0·8)	82 (64·1)
		Separated/Divorced/Widowed	68 (23·3)	15 (22·1)	2 (2·9)	1 (1·5)	0	50 (73·5)
	Occupation	Unemployed	95 (32·5)	36 (37·9)	2 (2·1)	3 (3·2)	0	54 (56·8)
		Employed	149 (51·0)	38 (25·5)	3 (2·0)	4 (2·7)	2 (1·3)	102 (68·5)
		Student	42 (14·4)	14 (33·3)	2 (4·8)	3 (7·1)	0	23 (54·8)
		Retiree	2 (0·7)	0	0	0	0	2 (100·0)
		Homemaker	4 (1·4)	2 (50·0)	0	1 (25·0)	0	1 (25·0)
	Living area	Urban	159 (54·5)	61 (38·4)	4 (2·5)	3 (1·9)	0	91 (57·2)
		Peri-urban	23 (7·9)	15 (65·2)	1 (4·3)	1 (4·3)	0	6 (26·1)
		Rural	110 (37·7)	14 (12·7)	2 (1·8)	7 (6·4)	2 (1·8)	85 (77·3)
	Mobile phone access	No	11 (3·8)	5 (45·5)	1 (9·1)	0	0	5 (45·5)
		Yes, feature phone	62 (21·2)	5 (8·1)	0	1 (1·6)	0	56 (90·3)
		Yes, smartphone	219 (75·0)	80 (36·5)	6 (2·7)	10 (4·6)	2 (0·9)	121 (55·3)
	Internet access	No	62 (21·2)	13 (21·0)	2 (3·2)	0	0	47 (75·8)
		Yes	230 (78·8)	77 (33·5)	5 (2·2)	11 (4·8)	2 (0·9)	135 (58·7)

Determinants of participation in outbreak-related citizen science in all nine countries

Determinants	n (%)								
	Asia					Africa			
	Bangladesh	India	Indonesia	Nepal	Philippines	Cameroon	Kenya	Uganda	Zimbabwe
Incentivization factors									
Able to learn new knowledge/skills	**134 (47·9)**	**89 (31·8)**	**128 (34·5)**	**105 (37·4)**	**198 (42·3)**	**76 (26·1)**	**93 (37·1)**	94 (23·8)	**141 (47·8)**
The value/importance of my participation in influencing real-world outcomes	46 (16·4)	38 (13·6)	76 (20·5)	39 (13·9)	111 (23·7)	54 (18·6)	33 (13·1)	73 (18·5)	60 (20·3)
An understanding of how the citizens science project will help me and my community	37 (13·2)	63 (22·5)	40 (10·8)	69 (24·6)	80 (17·1)	66 (22·7)	92 (36·7)	33 (8·4)	38 (12·9)
Monetary incentives	37 (13·2)	85 (30·4)	35 (9·4)	13 (4·6)	27 (5·8)	40 (13·7)	6 (2·4)	**180 (45·6)**	31 (10·5)
Urgency/seriousness of the problem to be addressed by the citizen science project (e.g. impact of pandemic/outbreak on my life)	26 (9·3)	5 (1·8)	92 (24·8)	55 (19·6)	52 (11·1)	55 (18·9)	27 (10·8)	15 (3·8)	25 (8·5)
Cultural factors									
The language used is easy for me to understand	**149 (53·2)**	19 (6·8)	**283 (76·3)**	**84 (29·9)**	**175 (37·4)**	**187 (64·3)**	**134 (53·4)**	**273 (69·1)**	**104 (35·3)**
Family upbringing	37 (13·2)	**209 (74·6)**	40 (10·8)	52 (18·5)	160 (34·2)	57 (19·6)	40 (15·9)	37 (9·4)	81 (27·5)
Religious/spiritual belief	77 (27·5)	51 (18·2)	30 (8·1)	76 (27·0)	104 (22·2)	33 (11·3)	48 (19·1)	74 (18·7)	78 (26·4)
Origin/Immigration status/Acculturation	17 (6·1)	1 (0·4)	18 (4·9)	69 (24·6)	29 (6·2)	14 (4·8)	29 (11·6)	11 (2·8)	32 (10·8)
Social factors									
Being part of a community/social network	**159 (56·8)**	**146 (52·1)**	**180 (48·5)**	**140 (49·8)**	**258 (55·1)**	**134 (46·0)**	**189 (75·3)**	**203 (51·4)**	**138 (46·8)**
My friends/family are also participating	75 (26·8)	77 (27·5)	88 (23·7)	69 (24·6)	121 (25·9)	63 (21·6)	21 (8·4)	75 (19·0)	47 (15·9)
My loved ones are supportive	1 (0·4)	17 (6·1)	8 (2·2)	25 (8·9)	55 (11·8)	46 (15·8)	15 (6·0)	25 (6·3)	36 (12·2)
It is popular/trendy	25 (8·9)	24 (8·6)	14 (3·8)	9 (3·2)	15 (3·2)	14 (4·8)	5 (2·0)	46 (11·6)	52 (17·6)
Stigma faced if I participate	1 (0·4)	13 (4·6)	76 (20·5)	28 (10·0)	12 (2·6)	16 (5·5)	10 (4·0)	19 (4·8)	16 (5·4)
Having a well-known/celebrity spokesperson promoting the activities	19 (6·8)	3 (1·1)	5 (1·3)	10 (3·6)	7 (1·5)	18 (6·2)	11 (4·4)	27 (6·8)	6 (2·0)
Attitude and emotional factors									
Feeling empowered to resolve an issue that is important to me	53 (18·9)	47 (16·8)	**115 (31·0)**	**120 (42·7)**	**139 (29·7)**	**106 (36·4)**	**130 (51·8)**	**200 (50·6)**	**117 (39·7)**
I enjoy the activities	**111 (39·6)**	**150 (53·6)**	110 (29·6)	36 (12·8)	94 (20·1)	70 (24·1)	31 (12·4)	72 (18·2)	77 (26·1)
It gives me a sense of achievement	72 (25·7)	67 (23·9)	50 (13·5)	58 (20·6)	113 (24·1)	45 (15·5)	54 (21·5)	64 (16·2)	64 (21·7)
My interest level in the topic/activities	44 (15·7)	16 (5·7)	96 (25·9)	67 (23·8)	122 (26·1)	70 (24·1)	36 (14·3)	59 (14·9)	37 (12·5)
Project-specific factors									
Having a clear understanding of what tasks are expected of me	**158 (56·4)**	36 (12·9)	**102 (27·5)**	55 (19·6)	**173 (37·0)**	**110 (37·8)**	**82 (32·7)**	79 (20·0)	**107 (36·3)**
Able to relate to the purpose of the citizen science project	73 (26·1)	35 (12·5)	42 (11·3)	**84 (29·9)**	80 (17·1)	42 (14·4)	76 (30·3)	60 (15·2)	86 (29·2)
Who is the organizer	20 (7·1)	**102 (36·4)**	71 (19·1)	35 (12·5)	42 (9·0)	42 (14·4)	10 (4·0)	**104 (26·3)**	21 (7·1)
Transparency on how the data will be handled	12 (4·3)	28 (10·0)	40 (10·8)	16 (5·7)	60 (12·8)	36 (12·4)	23 (9·2)	68 (17·2)	37 (12·5)
Privacy and confidentiality measures that are in place	3 (1·1)	65 (23·2)	52 (14·0)	25 (8·9)	53 (11·3)	32 (11·0)	20 (8·0)	37 (9·4)	22 (7·5)
Ease of finding information about the project/widespread awareness campaigns/advertisements	10 (3·6)	11 (3·9)	44 (11·9)	42 (14·9)	45 (9·6)	15 (5·2)	33 (13·1)	28 (7·1)	15 (5·1)
Amount of control I have over the project (active vs passive role)	4 (1·4)	3 (1·1)	20 (5·4)	24 (8·5)	15 (3·2)	14 (4·8)	7 (2·8)	19 (4·8)	7 (2·4)
Practicality factors									
Knowledge/skills needed to carry out the activities	**85 (30·4)**	17 (6·1)	**75 (20·2)**	**88 (31·3)**	**164 (35·0)**	57 (19·6)	**125 (49·8)**	61 (15·4)	**70 (23·7)**
Time commitment (hours per week)	76 (27·1)	58 (20·7)	67 (18·1)	46 (16·4)	87 (18·6)	**78 (26·8)**	37 (14·7)	**102 (25·8)**	57 (19·3)
Cost of participation	30 (10·7)	47 (16·8)	62 (16·7)	20 (7·1)	35 (7·5)	38 (13·1)	13 (5·2)	81 (20·5)	29 (9·8)
Commitment period (long-term or short-term)	42 (15·0)	6 (2·1)	25 (6·7)	23 (8·2)	58 (12·4)	20 (6·9)	34 (13·5)	75 (19·0)	51 (17·3)
Convenience/location	14 (5·0)	70 (25·0)	32 (8·6)	45 (16·0)	35 (7·5)	16 (5·5)	9 (3·6)	35 (8·9)	21 (7·1)
The level of risks/danger involved	4 (1·4)	**80 (28·6)**	49 (13·2)	26 (9·3)	39 (8·3)	32 (11·0)	12 (4·8)	13 (3·3)	13 (4·4)
Competing priorities/stage of life I am in	25 (8·9)	2 (0·7)	40 (10·8)	4 (1·4)	31 (6·6)	16 (5·5)	8 (3·2)	14 (3·5)	44 (14·9)
Medium of access (e.g. in-person, online, text message, call)	4 (1·4)	0	21 (5·7)	29 (10·3)	19 (4·1)	34 (11·7)	13 (5·2)	14 (3·5)	10 (3·4)

Factor with the highest proportion of participants for each country under the six categories of determinants is highlighted in bold.